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~~CONFIDENTIAL~~ 19 August 1954

MEMORANDUM FOR: THE RECORD

SUBJECT : Visit to the U.S. Navy Underwater Sound Laboratory at New London, Connecticut

1. Time and Place of Meeting: August 16-18 at the U.S. Navy Underwater Sound Lab at New London, Conn.

2. Attendance: Mr. Donald Carver - Bu.Ships
Mr. Joseph Hannigan - Bu.Ships
[redacted] - APD 25X1
Personnel of the Underwater Sound Lab.

3. Discussion:

a. The purpose of the APD representatives visit to the Underwater Sound Lab was to view evaluation tests on U.S. Navy infra-red communication equipment. This equipment included:

(1) AN/PAC-1 - A battery operated portable infra-red transmitter and receiver built by Webster-Chicago capable of two way voice communication at between three and five thousand yards.

(2) AN/SAC-4 - A two way voice or code communication transmitter and receiver designed for shipboard operation.

(3) AN/PAR-1 - An infra-red receiver of the lead thaolfide type.

(4) AN/UAC - An infra-red transmitter.

b. The Navy has engineered this equipment primarily to operate from ship to ship or ship to shore. Hence, most of the units are fairly large in size and weight and utilize a wide angle system of communication. The only unit warrenting serious attention and consideration from APD is the AN/PAC-1. This piece of gear is capable of being operated either from the operators shoulder, from a fixed unipod or tripod arrangement and from a waist strap similar to that used for carrying a flag. It operates from a tungsten lamp source and is mechanically modulated by a vibrating mirror arrangement similar to type W units. The power for the PAC-1 comes from a six volt wet cell and a ninety volt B battery.

c. The tests witnessed by the APD representative involved communication between a small boat and a fixed installation aboard

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an anchored ship. No difficulty was experienced by the personnel in the small boat in picking up the transmitter from the anchored vessel at ranges up to three thousand yards. The transmitter was either the PAC-1 or SAC-4. The receiver used was the SAC-1 or the PAR-1. However, because the small boat presented such a moving platform for the infra-red transmitter located there, great difficulty was encountered in maintaining voice communication from the small boat to the shore or the anchored vessel.

d. The tests are continuing and more valuable performance information should be obtained. It was felt that all pertinent data could be extracted from the monthly progress reports of the group and that it was not necessary to be a first hand observer for the remainder of the tests. The experience gained however, by viewing actual test conditions will aid in analyzing these reports and extracting the information of value to APD.

e. The Navy has little interest in operating infra-red equipment from two fixed shore locations. However, discussions with the personnel of the Sound Lab would indicate that the PAC-1 units should perform very well at five thousand yards using a tripod mount. It seems possible that this unit could be modified to increase its range and security (by narrowing its beam angle) and redesign could decrease its size and weight. It will be interesting to compare the AN/PAC-1 characteristics with those of the prototype currently being developed for APD [redacted] 25X1

f. In discussions with Dr. Milligan of the Sound Lab., it was brought out that the Bu.Ships supports basic infra-red research at various universities and industrial organizations. He particularly mentioned work done by Beasy at Westinghouse (on ceasium vapor lamps) and by Huxford at Northwestern. It would seem advantageous if a channel could be set up so that APD can obtain copies of the reports issued by these groups.

4. Actions:

a. APD should obtain copies of the equipment evaluation reports of the Underwater Sound Lab. when they are ready.

b. The possibility of obtaining copies of the pertinent reports of the work done by Beasy and Huxford should be investigated.

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